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Canada Patent No 897921

METHOD OF EMBOSSING THIN, LIMP PLASTIC FILM,
AND DISPOSABLE AND EMBOSSED PLASTIC BAG PRODUCT

Abstract: Thin polyethylene film, of 0.025 mm, or less thickness is passed between a pair of matching embossing rollers having, respectively, negative and positive embossing patterns on their surface, driven at the same circumferential speed, the speed of the embossing rollers being suitably chosen to allow the fiber to pass between the rollers while being embossed. The rollers are preferably cooled; the continuous embossed web, if 2-layer and tubular, is then inflated to separate the two-embossed layers, which can then be heat-sealed together at intervals and the edge slit to form separable bags, when rolled up in a single roll for ease of dispensing; the embossing patterns preferably, but not necessarily match at least at the heat-seal lines.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. Method of embossing a continuous web of limp plastic sheet material of less than 0.025 mm thickness comprising passing said material between a pair of rollers carrying, on their respective surfaces, the positive and negative of the embossing patterns, respectively, while controlling the circumferential speed of said rollers to be less than the travelling speed of the web to permit deformation of the web between the rollers, and removing said deformed web from said rollers at a speed not exceeding the travelling speed of the web supplied to the rollers.

2. Method according to Claim 1 including the step of temperature controlling the surface of said rollers.

3. Method according to Claim 1 including the step of cooling the surfaces of said rollers.

4. Method according to Claim 1 wherein said web is a closed, tubular double layer web;

wherein the step of passing said web through said rollers includes the step of passing both layers of material, in overlying relation, through said rollers to jointly emboss both said layers simultaneously and with the same pattern;

and said method includes the further step of separating, after embossing, said layers to prevent their sticking together at the embossing surfaces.

5. Method according to Claim 4 wherein said step of separating, after embossing, said layers includes the step of passing said embossed layers between spaced pairs of pinches rollers;

and introducing an air bubble into the tubular material between said layers in the zone between said spaced pairs of pinch rollers.

6. Method according to Claim 1 wherein the web is pulled from the embossing rollers at a speed substantially similar to the speed of the web supplied to the rollers.

7. Method of manufacturing a continuous roll of embossed bag structures of limp, plastic material of less than 0.025 mm thickness

comprising

passing a travelling tubular, double layer web between a pair of rollers carrying, on their respective surfaces, the positive and negative of the embossing patterns, respectively, while controlling the circumferential speed of said rollers to be less than the speed of supply to, and withdrawal from said rollers, to jointly emboss both said layers with the same pattern;

passing said embossed layers between spaced pairs of pinch rollers;

introducing an air bubble in the tubular material between said layers in the zones of said material between said spaced pairs of pinch rollers;

heat fusing said layers together along bag-defining lines to separate said web into individual bag units, and

forming a tear line of weakened material adjacent said fused lines to enable separation of said bag units.

8. Method according to Claim 7 wherein the step of heat fusing said bag-defining fuse lines includes the step of heat fusing said layers together with said embossing patterns of the layers in substantial registration.

9. Method according to Claim 7 including the step of cooling said rollers.

10. Method according to Claim 7 wherein the circumferential speed of the embossing rollers is at least 20% less than the linear speed of said web material being supplied to said embossing rollers; and the speed of withdrawal from said embossing rollers is substantially equal to but slightly less than said linear supply speed of web material.

11. Method of manufacturing a continuous embossed bag structure comprising passing a single layer flat web of limp plastic sheet material between a pair of rollers carrying, on their respective surfaces, the positive and negative of the embossing pattern, respectively, while controlling the circumferential speed of said rollers to be less than the speed of supply to, and withdrawal from said rollers of said web of material;

folding said web of material over itself to form a two-layer web;

folded lengthwise at at least one longitudinal edge;

heat fusing said layers together along bag-defining lines transverse

to said web separating said web into individual bag units; and

forming a tear line of weakened material adjacent said fuse lines to enable ready separation of said bags.

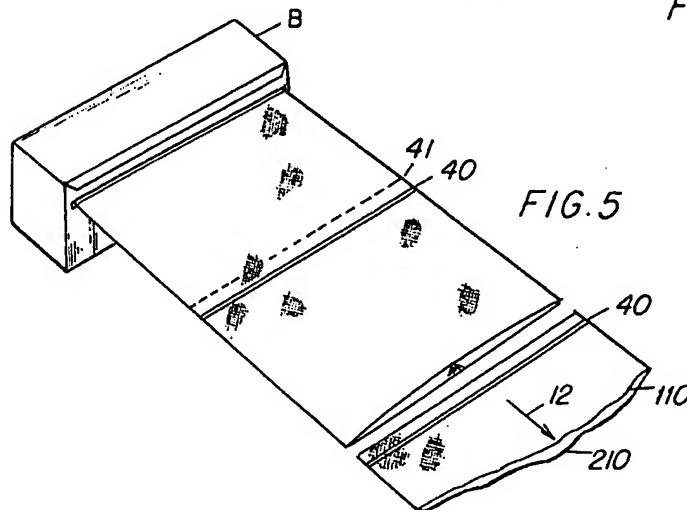
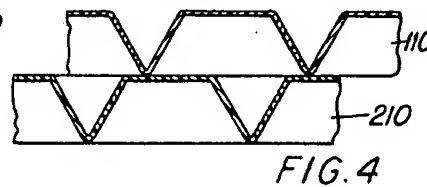
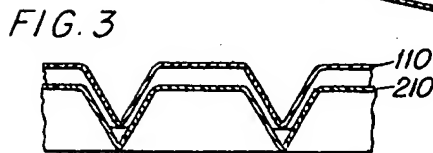
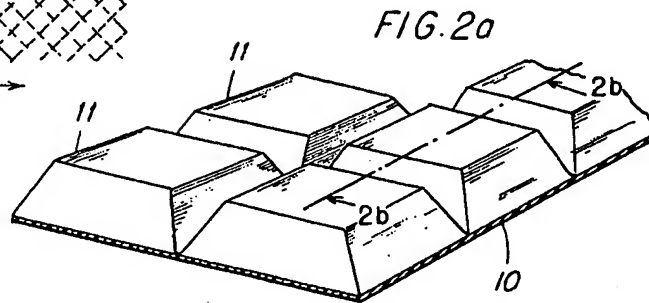
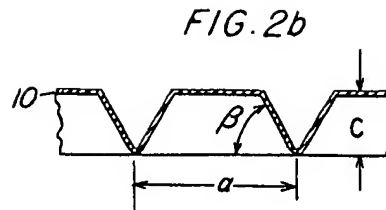
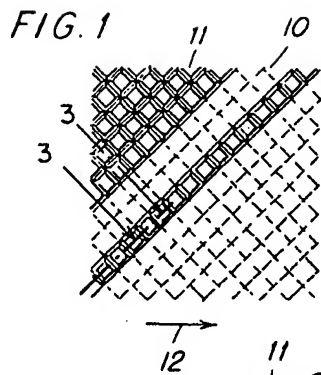
12. Method according to Claim 11 wherein said step of heat fusing said bag-defining fuse lines includes the step of heat fusing said layers, together with said embossing patterns in substantial registration.

13. Method according to Claim 11 including the step of cooling said rollers.

14. Method according to Claim 11 wherein said rollers have different patterns applied thereto in a direction axially of said rollers; and the step of folding said web upon itself includes the step of folding said web in the region of change from one pattern to another on said embossed web.

15. Method according to Claim 11 wherein the circumferential speed of the embossing rollers is at least 20% less than the linear speed of said web material being supplied to said embossing rollers; and the speed of withdrawal from said embossing rollers is substantially equal to but slightly less than said linear supply speed of web material.





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FIG. 6

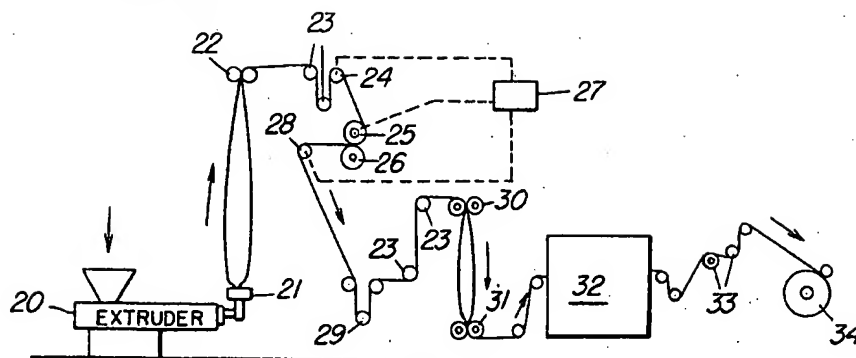


FIG. 7

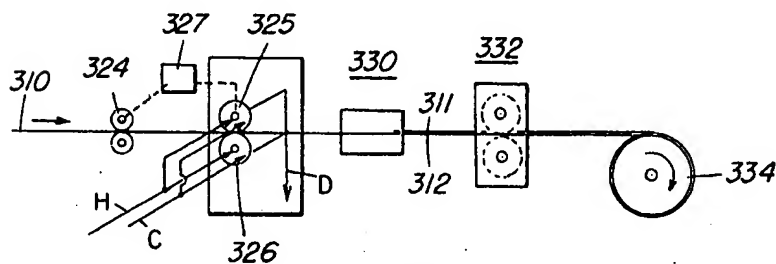
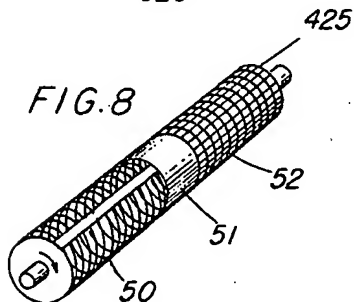


FIG. 8



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